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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/671,715	09/27/2000	Anatoly Fabrikant	M-10699 US	6087

36257 7590 06/17/2004

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EXAMINER

SMITH, ZANDRA V

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 06/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/671,715

Applicant(s)

FABRIKANT ET AL.

Examiner

Zandra V. Smith

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-139 is/are pending in the application.
- 4a) Of the above claim(s) 31-35, 59-61, 84-86 and 109-111 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-30, 42-51, 56, 57, 68-77, 82, 83, 93-108 and 112-139 is/are allowed.
- 6) ☒ Claim(s) 1-4, 7, 8, 36-39, 52, 58, 62-65, 78 and 87-90 is/are rejected.
- 7) ☒ Claim(s) 5, 6, 40, 41, 53-55, 59, 66, 67, 70-77, 79-81, 91 and 92 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

Claims 1 and 36 are objected to because of the following informalities: lines 8 and 10 of claims 1 and 36 include the word “intensity”, there is insufficient antecedent for this limitation since the claims have been amended to eliminate reference to intensity. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4, 7, 36-39, 52, 58, 62-65, 78, and 87-90 are rejected under 35 U.S.C. 102(e) as being anticipated by *Xu et al. (US 6,483,580)*.

As to **claims 1 and 36**, Xu provides a spectroscopic scatterometer, comprising:

directing a beam of polychromatic light at a diffractive structure and detecting corresponding intensities or changes in polarization state of the diffracted beam at a number of wavelengths (col. 9, line 60-col. 10, line 5);

carrying out a measurement of the structure to obtain measured intensities or changes in polarization state;

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providing one or more sets of intensity or changes in polarization state data of the diffraction at different wavelengths (col. 7, lines 7-20 and col. 9, lines 1-10); and

deriving the value of one or more parameters of the diffracting structure from the measured intensity or changes in polarization state (col. 11, lines 35-60).

As to **claims 2-3 and 37-38**, Xu discloses everything claimed, as applied above, in addition a library is generated, measurements compared and unexpected ranges are covered (col. 7, lines 10-30).

As to **claims 4 and 39**, Xu discloses everything claimed, as applied above, in addition non-linear regressions are referenced (col. 7, lines 25-35).

As to **claim 7**, Xu discloses everything claimed, as applied above, in addition manufacturing parameters are supplied to a manufacturing instrument (col. 7, lines 50-65).

As to **claims 52 and 58**, Xu provides a spectroscopic scatterometer, comprising: directing a beam of polychromatic light at a diffractive structure and detecting corresponding intensities or changes in polarization state of the diffracted beam at a number of wavelengths (col. 9, line 60-col. 10, line 5);

a system carrying out a measurement of the structure to obtain measured intensities or changes in polarization state;

a data source that supplies a library of sets of intensity or changes in polarization state data (col. 7, lines 10-40);

a processor providing one or more sets of intensity or changes in polarization state data of the diffraction at different wavelengths (col. 7, lines 7-20 and col. 9, lines 1-

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10) and deriving the value of one or more parameters of the diffracting structure from the measured intensity or changes in polarization state (col. 11, lines 35-60).

As to claims 62-65, 78, and 87-90, these correspond as the computer program and a system for transmitting the program to perform a method, these claims correspond to claims 1, 36, and 52 and since the computer is programmed to perform the method as claimed (col. 7, lines 1-40), the limitations are inherently met.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Xu et al.* (US 6,483,580).

As to **claim 8**, Xu discloses everything claimed, as applied above, with the exception if the manufacturing instrument being a stepper or etcher, however since the parameters are sent to an instrument that control the shape of the grating, it would have been obvious to one having ordinary skill in the art at the time of invention to send the data to an etcher or stepper since the etcher or stepper control the shape of the grating profile.

Allowable Subject Matter

Claims 9-30, 42-51, 56-57, 68-77, 82-83, 93-108, 112-139 are allowable over the prior art of record.

Claims 5-6, 40-41, 53-55, 59, 66-67, 70-77, 79-81, 91-92 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record, taken alone or in combination, fails to disclose or render obvious, choosing a first set of values of the one or more parameters as a function of sensitivity of the change in polarization, storing the eigenvalues and using the stored eigenvalues for obtaining the value of one or more parameters of the diffracting structure, wavelengths of the intensity or change in polarization state data in the one or more sets are chosen to reduce the influence of the properties of the one or more layers, wherein density of the intensity or change in polarization state data provided at the wavelengths in the one or more sets is chosen as a function of sensitivity of the intensity or change in polarization state data to changes in wavelengths, in combination with the rest of the limitations of the claims.

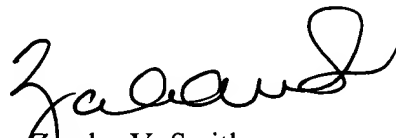
Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zandra V. Smith whose telephone number is (571) 272-2429. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Zandra V. Smith
Primary Examiner
Art Unit 2877

June 14, 2004